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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
NICOLAS, WESLEY A	
ART UNIT	PAPER NUMBER
1742	10

DATE MAILED: 12/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/944,370	DICKINSON ET AL.	
	Examiner	Art Unit	
	Wesley A. Nicolas	1742	

-- Th MAILING DATE of this communication appears on th cover sh et with the correspond nce address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 September 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-72* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-72* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

This is in response to the Response dated September 22, 2003. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-72 are currently pending in this application.

Claim Rejections - 35 USC § 102

1. Claims 1-5, 11-15, 22-25, 27-31, 38-40, 43-45, 48-50, 52-55, 58-60, and 63 are rejected under 35 U.S.C. 102(e) as being anticipated by Belongia et al. (U.S. 6,391,209 B1).

Claim 1 is rejected because Belongia et al. teach a system for use with a plating cell configured to plate objects in a plating process wherein at least one byproduct is created in a plating substance used in the plating cell, the system comprising:

- a purification system configured to remove at least a portion of the at least one byproduct from the plating substance (Abstract),
- wherein the purification system comprises at least a first processing vessel (*e.g.* Fig. 1, numeral 1),
- a second processing vessel (*e.g.* Fig. 1, numeral 4), and
- a flow path providing flow from the first processing vessel to the second processing vessel (*e.g.* Fig. 1, path from numerals 1 to 4), wherein the flow path is configured such that the flow from the first vessel to the second vessel is caused by gravity (col. 6, line 14: "gravity").

Claim 2 is rejected because Belongia et al. teach that the first processing vessel comprises a reacting vessel configured to remove said at least a portion of the at least one byproduct (col. 6, lines 8-35).

Claim 3 is rejected because Belongia et al. teach that the reacting vessel is configured to supply at least one gas in the reacting vessel to react with the at least one byproduct (Fig. 1, numeral 14).

Claims 4, 14, 22, and 30 are rejected the specific gas composition or pressure are method limitations which do nothing to further define the structure in apparatus claims. The apparatus must merely be capable of operating at the specific operating conditions which appears to be the case with the apparatus of Belongia et al. absent evidence to the contrary. The specific gas or pressure of operation would have been considered a result effective variable by one having ordinary skill in the art. As such, one having ordinary skill would have routinely optimized the gas composition or pressure of the chamber to obtain the purification attendant therewith. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In re Aller, 105 USPQ 233.

Claim 5 is rejected because Belongia et al. teach that the reacting vessel is configured to supply UV light in the reacting vessel (Fig. 1, numeral 13).

Claim 11 is rejected because Belongia et al. teach that the purification system includes a third processing vessel interposed between the first processing vessel and the second processing vessel (Fig. 1, numeral 34).

Claim 12 is rejected because Belongia et al. teach that the first and third processing vessels comprises a reacting vessel configured to remove said at least a portion of the at least one byproduct from the plating substance (Abstract).

Claim 13 is rejected because Belongia et al. teach that the reacting vessel of at least one of the first and third processing vessels is configured to supply at least one gas to react with the at least one byproduct (Fig. 1, numeral 14).

Claim 15 is rejected because Belongia et al. teach that at least one of the reacting vessels is configured to supply UV light to increase the reaction between the at least one byproduct and the gas (Fig. 1, numeral 13).

Claim 23 is rejected because Belongia et al. teach of a system for use with a plating cell configured to plate objects in a plating process wherein at least one byproduct is created in a plating substance used in the plating cell (col. 6), the system being configured to withdraw at least a portion of the plating substance used in the plating cell (Fig. 1, path between numeral 4 and numeral 11), to remove at least a portion of the at least one byproduct (Abstract), and to return at least a portion of the plating substance to the plating cell (Fig. 1, path from numeral 1 to numeral 4), the system comprising: a tank for containing the plating substance used in the plating cell (Fig. 1, numeral 4); and a purification system according to claim 1 (Fig 1, numeral 11).

Claim 24 is rejected because Belongia et al. teach a pump for withdrawing at least a portion of the plating substance from the tank (Fig. 1, numeral 3 and col. 6, lines 9-15).

Claim 25 is rejected because Belongia et al. teach a return pump for returning at least a portion of the plating substance to the tank (Fig. 1, numeral 17).

Claim 27 is rejected because Belongia et al. teach that the purification system includes a third processing vessel interposed between the first and second processing vessels (Fig. 1, numeral 34).

Claim 28 is rejected because Belongia et al. teach that each of the first and third processing vessels comprises a reacting vessel configured to remove said at least a portion of the at least one byproduct from the plating substance (Abstract).

Claim 29 is rejected because Belongia et al. teach that the reacting vessel of at least one of the first and third processing vessels is configured to supply at least one gas to react with the at least one byproduct (Fig. 1, numeral 14).

Claim 31 is rejected because Belongia et al. teach that at least one of the reacting vessels is configured to supply UV light to react with the at least one byproduct and the gas (Fig. 1, numeral 13).

Claim 38 is rejected because Belongia et al. teach a system for use with a plating cell configured to plate objects in a plating process wherein at least one byproduct is created in a plating substance used in the plating cell (Abstract), the system comprising: a purification system configured to remove at least a portion of the at least one byproduct from the plating substance (Fig. 1, numeral 11), wherein the purification system comprises at least a first processing vessel (Fig. 1, numeral 11), wherein the first processing vessel includes an inlet near its top and an outlet near its bottom (Fig. 1, numeral 11 with inlets around numeral 12 and outlet on right side of chamber), a second

processing vessel (Fig. 1, numeral 16), wherein the second processing vessel includes an inlet near its top (Fig. 1, line going into numeral 16), and wherein the second processing vessel is arranged such that the inlet of the second processing vessel is lower than the inlet of the first processing vessel (Fig. 1, numeral 16 compared to numeral 11), and a flow path providing flow from the outlet of the first processing vessel to the inlet of the second processing vessel (Fig. 1, flow path from numeral 11 to numeral 16).

Claim 39 is rejected because Belongia et al. teach that the first processing vessel comprises a reacting vessel configured to remove said at least a portion of the at least one byproduct, wherein the reacting vessel is configured to supply at least one gas in the reacting vessel to react with the at least one byproduct (Fig. 1, numerals 11 and 14 and Abstract).

Claim 40 is rejected because Belongia et al. teach that the reacting vessel is configured to supply UV light in the reacting vessel (Fig. 1, numeral 13).

Claim 43 is rejected because Belongia et al. teach that the purification system includes a third processing vessel interposed between the first processing vessel and the second processing vessel (Fig. 1, numeral 34), wherein the third processing vessel includes an inlet near its top (Fig. 1, flow path going into numeral 34) and an outlet near its bottom (Fig. 1, flow path leaving numeral 34), wherein the outlet of the first processing vessel is flow connected to the inlet of the third processing vessel, and the outlet of the third processing vessel is flow connected to the inlet of the second processing vessel (Fig. 1, flow path connecting numerals 11, 34, and 16).

Claim 44 is rejected because Belongia et al. teach that at least one of the first and third processing vessels comprises a reacting vessel configured to supply at least one gas to react with the at least one byproduct (Fig. 1, numeral 14).

Claim 45 is rejected because Belongia et al. teach that the reacting vessel is configured to supply UV light (Fig. 1, numeral 13).

Claim 48 is rejected because Belongia et al. teach a system for use with a plating cell configured to plate objects in a plating process wherein at least one byproduct is created in a plating substance used in the plating cell (Abstract), the system being configured to withdraw at least a portion of the plating substance used in the plating cell (Fig. 1, numeral 3), to remove at least a portion of the at least one byproduct (Fig. 1, flow path from numeral 4 to numeral 11), and to return at least a portion of the plating substance to the plating cell (Fig. 1, numeral 17), the system comprising: a tank for containing the plating substance used in the plating cell (Fig. 1, numerals 1 and 4); and a purification system according to claim 38 (Fig 1, numeral 11).

Claim 49 is rejected because Belongia et al. teach a pump for withdrawing at least a portion of the plating substance from the tank (Fig. 1, numeral 3).

Claim 50 is rejected because Belongia et al. teach a return pump for returning at least a portion of the plating substance to the tank (Fig. 1, numerals 3 and 17).

Claim 52 is rejected because Belongia et al. teach that the purification system includes a third processing vessel interposed between the first and second processing vessels (Fig. 1, numeral 34), wherein the third processing vessel includes an inlet near its top and an outlet near its bottom (Fig. 1, flow path going into numeral 34 and leaving

numeral 34), wherein the outlet of the first processing vessel is flow connected to the inlet of the third processing vessel and the outlet of the third processing vessel is flow connected to the inlet of the second processing vessel (Fig. 1, flow path connecting numerals 11, 34, and 16).

Claim 53 is rejected because Belongia et al. teach a method for removing at least a portion of at least one byproduct from a plating substance used in a plating cell (Abstract), the method comprising: flowing a used plating substance from the plating cell to a purification system configured to remove at least a portion of at least one byproduct from the used plating substance (Abstract and Fig. 1, flow path from numeral 4 to numeral 11), wherein the purification system comprises at least a first processing vessel (Fig. 1, numeral 1), a second processing vessel (Fig. 1, numeral 4), and a flow path providing flow from the first processing vessel to the second processing vessel (Fig. 1, flow path between numerals 1 and 4), wherein the flow path is configured such that the flow from the first processing vessel to the second processing vessel is caused by gravity (col. 6, line 14: "gravity"); passing the used plating substance from the first processing vessel to the second processing vessel by gravity (col. 6, line 14: "gravity"); and removing at least a portion of the at least one byproduct from the used plating substance in at least one of the first and second processing vessels (col. 6, lines 9-41).

Claim 54 is rejected because Belongia et al. teach that the first processing vessel comprises a reacting vessel configured to remove said at least a portion of the at least one byproduct (Fig. 1, numeral 11), and wherein the method further comprises

supplying at least one gas within the reacting vessel such that said at least a portion of the at least one byproduct reacts with the gas (Fig. 1, numeral 14).

Claim 55 is rejected because Belongia et al. teach of applying UV light to the used plating substance within the reacting vessel to increase the amount of reaction between the gas and said at least a portion of the at least one byproduct (Fig. 1, numeral 13).

Claims 58-59 are rejected because Belongia et al. teach that the flowing/conveying comprises conveying the used plating substance from a storage tank to the purification system (Fig. 1, flow path from numeral 1 to numeral 4).

Claim 60 is rejected because Belongia et al. teach of pumping the used plating substance from the purification system to the tank with a return pump (Fig. 1, numeral 3 and numeral 17).

Claim 63 is rejected because Belongia et al. teach that the purification system includes a third processing vessel interposed between the first and second processing vessels, and wherein the passing includes passing the used plating substance through the third processing vessel (Fig. 1, numeral 34).

Claim Rejections - 35 USC § 103

2. Claims 6-8, 16-18, 26, 32-34, 41, 46, 51, 56, 61-62, and 64-66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Belongia et al. (U.S. 6,391,209 B1), as

applied to claims 3, 13, 24-25, 29, 39, 45, 49-50, 54, and 60 above, and further in view of Chao et al. (6,299,753).

Belongia et al. are as applied, argued, and disclosed above and incorporated herein but fail to specifically teach of a gassing/degassing apparatus in treatment of the plating fluid or of fluid level sensing and control.

Chao et al. teach the use of a gassing/degassing apparatus in treatment of plating fluid (Fig. 1, numeral 90), and further teach the of fluid level sensing and control (Abstract).

Claims 6-7, 16-17, 32-33, 41, 46, and 56 are rejected because it would have been obvious and within the ordinary skill in the art at the time the invention was made to have modified Belongia et al. to use a plurality of degassing vessels as taught by Chao et al. because Chao et al. teach of degassing vessels which are configured to remove gas in the plating substance (Fig. 2, numerals 58 and 60) which reduces the amount of contaminants in the plating fluid.

Claims 8, 18, and 34 are rejected the specific gas composition or pressure are method limitations which do nothing to further define the structure in apparatus claims. The apparatus must merely be capable of operating at the specific operating conditions which appears to be the case with the apparatus of Belongia et al. and Chao et al. The specific gas or pressure of operation would have been considered a result effective variable by one having ordinary skill in the art. As such, one having ordinary skill would have routinely optimized the gas composition or pressure of the chamber to obtain the

purification attendant therewith. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In re Aller, 105 USPQ 233.

Claims 26, 51, 61-62, and 64-66 are rejected because it would have been obvious and within the ordinary skill in the art at the time the invention was made to have modified Belongia et al. to use the level detection/control system of Chao et al. because Chao et al. teach that the purification system includes a level detector associated with the second processing vessel and wherein the return pump is controlled based on a level detected by the level detector (Abstract and Fig. 2, numeral 51) which would have minimized user interaction with the apparatus and increasing the overall efficiency.

3. Claims 9-10, 19-21, 35-37, 42, 57 and 67-72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Belongia et al. (U.S. 6,391,209 B1), as applied to claims 1, 11, 28, 38, and 53 above, and further in view of Anderson et al. (4,025,426).

Belongia et al. are as applied, argued, and disclosed above and incorporated herein but fail to specifically teach of a processing vessel which includes an inlet near its top and an outlet near its bottom.

Anderson et al. teach the use of a processing vessel which includes an inlet near its top and an outlet near its bottom (Fig. 1, numerals 18, 20, 21, and 22).

Claims 9, 19, 35, 57 and 67-72 are rejected because it would have been obvious and within the ordinary skill in the art at the time the invention was made to have

modified Belongia et al. to have its inlets near the top and its outlets near the bottom as taught by Anderson et al. because Anderson et al. teach that the processing vessels have their inlets near the top and their outlets near the bottom (Fig. 1, interaction between numerals 18, 20, 21, and 22) which would have facilitated flow of fluid quickly and easily from one vessel to the next.

Although neither Belongia et al. nor Anderson et al. disclose the specific spacing of the vessels, claims 10, 21, 37, and 42 are rejected because it would have been obvious and within the ordinary skill in the art at the time the invention was made to have modified Belongia et al. to use the specific spacing as shown by Anderson et al. because Anderson et al. appear to teach that the inlet of the second processing vessel ranges from about 0.5 inches to about 10 inches lower than the inlet of the first processing vessel which would depend on the total scale of the apparatus (Fig. 1, numerals 18, 20, 21, and 22).

Although Belongia et al. nor Anderson et al disclose the vessels at the same height, claims 20 and 36 are rejected because the specific height of the vessels would have been an obvious engineering design improvement that comes from ecological and economic design considerations. Changing ecological and economic considerations do not make obvious expedient into unobvious improvement. Ex parte Fuller, 172 USPQ 317.

4. Claims 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Belongia et al. - Chao et al. combination, as applied to claims 46 above, and further in view of Anderson et al. (4,025,426).

The Belongia et al. - Chao et al. combination are as applied, argued, and disclosed above and incorporated herein but fail to specifically teach of a processing vessel which includes an inlet near its top and an outlet near its bottom.

Anderson et al. teach the use of a processing vessel which includes an inlet near its top and an outlet near its bottom (Fig. 1, numerals 18, 20, 21, and 22).

Although neither Belongia et al., Anderson et al., nor Chao et al. disclose the specific spacing of the vessels, claims 10, 21, 37, and 42 are rejected because it would have been obvious and within the ordinary skill in the art at the time the invention was made to have modified Belongia et al. to use the specific spacing as shown by Anderson et al. because Anderson et al. appear to teach that the inlet of the second processing vessel ranges from about 0.5 inches to about 10 inches lower than the inlet of the first processing vessel which would depend on the total scale of the apparatus (Fig. 1, numerals 18, 20, 21, and 22).

REMARKS

Examiner inadvertently mislabeled the numerals referring to the vessels with respect to their transport of fluid by means of gravity. Therefore, this rejection is a non-final rejection.

Applicant's primary argument was that the reference of Belongia et al. did not teach a flow from a first vessel to a second vessel by way of gravity, or at least that the passage in the reference (col. 6) did not refer to what Examiner referenced as the first and second vessel. In response, Examiner inadvertently mislabeled the first and second vessel, and has corrected that error in this rejection by referring to the first vessel as Fig. 1, numeral 1, and the second vessel as Fig. 1, numeral 4.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wesley Nicolas whose telephone number is (703)305-0082. The examiner can normally be reached on Mon.-Thurs. from 7am to 5pm.

The Supervisory Primary Examiner for this Art Unit is Roy King whose telephone number is (703) 308-1146.

The fax number for this Group is (703) 872-9310.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0661.

WESLEY A. NICOLAS
PATENT EXAMINER

November 30, 2003